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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/973,302	10/09/2001	David J. Chaiko	051583-0254	6036
23524	7590	11/18/2003	EXAMINER	
FOLEY & LARDNER 150 EAST GILMAN STREET P.O. BOX 1497 MADISON, WI 53701-1497			WYROZEBSKI LEE, KATARZYNA I	
			ART UNIT	PAPER NUMBER
			1714	

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/973,302	CHAIKO, DAVID J.	
	Examiner	Art Unit	
	Katarzyna Wyrozebski Lee	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 and 32-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-24, 32-34 is/are allowed.
- 6) ☒ Claim(s) 1-7, 20 and 35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

In view of applicant's amendment submitted on 9/30/2003 following final office action has been necessitated. The applicant's have amended independent claim to require that the polymer utilized in intercalation and adsorption of the polymer onto layers of clay platelets form an oxonium cation with the cations of the clay. Claims 1-24, 32-35 are pending.

Claim Rejections - 35 USC § 112 and Claim Objections

After considering applicants arguments with respect to the objections to claims 11 and 17, the objection is overcome.

With respect to the applicant's arguments regarding 112 rejection of claim 4 and recitation of monoalkyl ether, the rejection is overcome.

With respect to the applicant's arguments regarding 112 rejection of claim 4 for containing indefinite term of "derivative" the rejection is not overcome and is incorporated here by reference. Term "derivative" renders claims indefinite.

With respect to the applicant's arguments regarding claim 13 with respect to the glycol based surfactants, the rejection is overcome.

With respect to the applicant's arguments regarding 112 rejection of claim 20 such rejection is not overcome and is incorporated herein by reference. The reasons why limitations such as "less than about" or "greater than about" render claims indefinite in chemical sense is following. In case of "less than about", term less than would signify an amount that is less than

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2%. At the same time, term about allows for amounts slightly higher than 2 %. The amount of water in claim 20 of the present invention cannot be less than 2 % and at the same time encompass numbers higher than 2%.

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claim 35 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Newly added claim is hereby rejected for containing term “less than about” as discussed in claim 20 above. The term “less than about” renders claims indefinite since it is not clear if the amount of water is less than 2% or about 2%.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over BEALL (US 5,552,469).

The discussion of the disclosure of the prior art of BEALL from paragraph 6 of the office action mailed on 6/23/2003 is incorporated here by reference. Upon applicant's amendment and argument claims 4 and 7 are now only rendered obvious, since glycols are not inherent.

5. Claim 1-3, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over CARTER (US 5229,451).

The discussion of the disclosure of the prior art of CARTER from paragraph 8 of the office action mailed on 6/23/2003 is incorporated here by reference.

In the amendment filed on 9/30/2003 the applicants argued following:

Specifically, Beall fails to disclose polymers adsorbed onto the basal surface of a phyllosilicate as oxonium ions. Nor does this reference teach any polymers that inherently have this property. For example, although Beall's list of suitable polymers goes on for 228 lines (Col. 9, Ln. 41 - Col. 12, Ln. 67), nowhere does he teach or suggest the use of polyethylene glycol, polypropylene glycol or monoalkyl ether derivatives thereof for use in nanocomposites. Therefore, Beall does not disclose each and every element of the claimed invention and Applicant respectfully requests that this ground of rejection be withdrawn.

First, the examiner would like to point the applicant to col. 15, lines 17-20 and lines 25-28 of the prior art of BEALL. This part of the disclosure of the prior art clearly discloses use of polyethylene glycol and polypropylene glycol and thermosetting polymer.

The reason why this rejection is not overcome, that since glycol polymers are taught by the prior art of BEALL, one of ordinary skill in the art would expect them to react the same in aqueous dispersion as they do in the present invention and thereby form an oxonium cation. In addition polymers such as polyvinyl alcohols, that also have pendant -OH groups would be capable of forming oxonium cations in dispersions. Therefore even though as the applicant put it

the list of useful polymers in the disclosure of BEALL goes on, the fact is that the glycols of the present invention are in fact taught, therefore they are rendered obvious to use.

The examples of the prior art of BEAL further teach that the polymeric components are sorbed onto the clay platelets.

Applicant's arguments with respect to the prior art of BENTON are considered moot due to discontinuation of this prior art against present claims. The examiner agrees with the applicants that PVP and PEO will not form oxonium cations with the clay platelets.

Applicant's arguments with respect to the prior art of CARTER are also considered moot due to discontinuation of this prior art against present claims. The liquid polyesters of the prior art of CARTER would not form oxonium cations with the clay.

Allowable Subject Matter

6. Claims 8-19, 21-24, 32-34 are allowed. The only prior art of record that is still applicable against present claims, simply discloses composition for nanocomposite comprising polymer and clay. The prior art of BEALL would not result in anisotropic composition of claims 8-24 and 32-34 where as the definition requires (Chemical Dictionary) the refractive index of the crystals varies with the direction of incident light.

Claims 20 and 35 although do not have prior art rejection are rejected under 112 2nd paragraph.

Beginning December 8 2003 the new phone number for the examiner of record will be (571) 272-1127.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

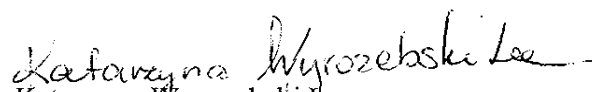
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Katarzyna Wyrozebski Lee
Primary Examiner
Art Unit 1714

November 13, 2003